

Patient Assessment, an Essential Tool in Placement and Planning of Care

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THE importance of assessing patients' needs has been receiving increasing attention in recent years within the spectrum of health services. On January 12 and 13, 1965, an ad hoc conference on patient evaluation was held in Warrenton, Va., sponsored by the Public Health Service's Division of Chronic Diseases. The 25 experts participating in the discussion (representing universities, care service programs, State and local health departments, and the Federal Govern-

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ment) agreed that a system of rapid assessment and classification of patients' needs, and determination of the health care services most appropriate to meet those needs, was essential.

The difficulty, then and now, seems to be that there is only a limited body of knowledge and experience available concerning the comprehensive assessment of patients' needs for health care services. Many individual researchers have worked on various aspects of the problem, but relatively few have attempted to develop techniques for such assessment; that is, techniques which would thoroughly and systematically review the physical, psychosocial, and socioeconomic aspects of a patient's situation. Even fewer have attempted to use such an assessment as a guide to determining the most appropriate health care services for each patient's needs.

As was generally agreed at the conference, patient assessment techniques are prerequisite to the proper selection of health care services for patients. If the health care resources of this country are

to be used most effectively and with maximum economy of funds and personnel, the development of such techniques is essential.

As a result of this conference, the participants decided to encourage the further development or continuation of experimental programs of patient assessment in various settings in order to build up a body of knowledge focused on the problem in distinctive ways, so that several uses for patient assessment would be pinpointed. Studies in a profiled approach to classification of the chronically ill and aged among various community groups, continuing more than a decade at Case Western Reserve University in Cleveland, had received early support with the 1958 appointment of Dr. Sidney Katz as medical investigator, in a cooperative agreement with the Public Health Service (1).

Following another cooperative agreement with the Philadelphia Geriatric Center, the combination of physical findings with a behavioral and adjustment evaluation was developed into a functional classification that serves as a

guide for placement of aged persons (2). The RAPIDS tool studied in San Mateo County, Calif., served primarily to screen out or flag inappropriate patients in populations of nursing homes and other residential facilities.

A broader usage for the placement of patients was attempted in Baltimore (Md.) City Hospitals, taking patient prognosis and goals and available community resources into consideration. The "Interdisciplinary Classification for the Aged" was originally designed by Dr. Bernard Burack, medical director of the Jewish Guild for the Blind in New York City, for assessment of care plans for individual patients in a home for the aged blind (3). With recognition of its potentialities for wider utility, it has been tested by the Medical and Health Research Association of New York City, Inc., as a tool for epidemiologic study of medical and functioning status of patients with chronic disease in a number of different care settings.

At St. Luke's Hospital in New York City, the problems of assessing the patients' needs have been studied in the emergency room, a setting in which emphasis must naturally be placed on speed, efficiency, and streamlining of the procedure in order to get as much information as rapidly as possible. The focus of the Community Health Information and Planning Service in Syracuse, N.Y., has been on determination of the patients' needs to guide future planning of community facilities and personnel (4).

Patient Assessment

Common to these several approaches is the unifying concept of patient assessment, which we define as a tool to assist in making decisions concerning both the

placement of the patient within the care system and the care needed by him. It can be applied in any setting and at all stages in the process of patient care. The interrelationship of patient assessment and patient classification should be recognized.

One ultimate purpose of patient assessment is triage, or the classification of a patient into a group that is considered to require placement in a certain care setting. (Triage has been defined as the sorting and first-aid treatment of battle casualties in collecting stations at the front before their evacuation to hospitals in the rear: Webster's Third New International Dictionary of the English Language Unabridged.) Once the patient is placed in that setting, he is then further classified into a subgroup requiring a certain plan of care. For example, the attending physician who examines a patient and makes the decision that hospitalization is required as the result of his assessment has implicitly classified his patient as a "hospital" patient. Further, the therapeutic measures taken also result from the assessment of needs, and again the patient is classified. In the various studies to be described, patients have been classified into groups at several stages in the process of patient assessment, each scheme for patient classification having its own distinctive characteristic in accordance with the nature of the study.

Patient assessment should be distinguished from patient care evaluation, which focuses on care and its outcome rather than on the patient and his needs. Patient care evaluation may be defined as the process for appraising the effectiveness, appropriateness, and efficiency of the care given to patients. Patient assessment has

many uses, which are grouped as follows:

With respect to the patient—

To identify the care needs of patients and to ascertain the adequacy of available care

To develop a treatment plan for care of the patient

To aid in patient care evaluation and utilization review

With respect to an individual resource—

To facilitate effective utilization of the individual health resource

To aid in program evaluation of the facility or service

To assist in identifying restrictive policies and procedures that block the provision of care

To provide a source of data useful in orientation and training of all health personnel

With respect to the community—

To facilitate the development of an efficient system of health care

To assist in determining overall community needs for additional or new services

To assist in establishing priorities for health planning purposes

With respect to research—

To assist in identifying care needs in populations

To facilitate epidemiologic comparisons of groups of patients

Theoretical Considerations

Flagle (5) has suggested an ecological model for the flow of patients to and from the general population and to and from the several care settings in the continuum of care (fig. 1). The general population is represented by the age cohort pyramid to give the model the capability of forecasting future census distributions. The flow of patients may be in any direction, from the

population pyramid to each of the care settings and vice versa, and from each of the settings to any other setting. Two probabilities may be considered: (a) the probability that a healthy person moves from the population pyramid into one of the care settings and (b) the probability that one stays a given length of time in this setting. Viewing the flow of

patients from the vantage point of some particular care setting, three stages are visualized: input, throughput, and output. Those entering the setting are in the input or admissions stage and those leaving, in the output or discharge stage.

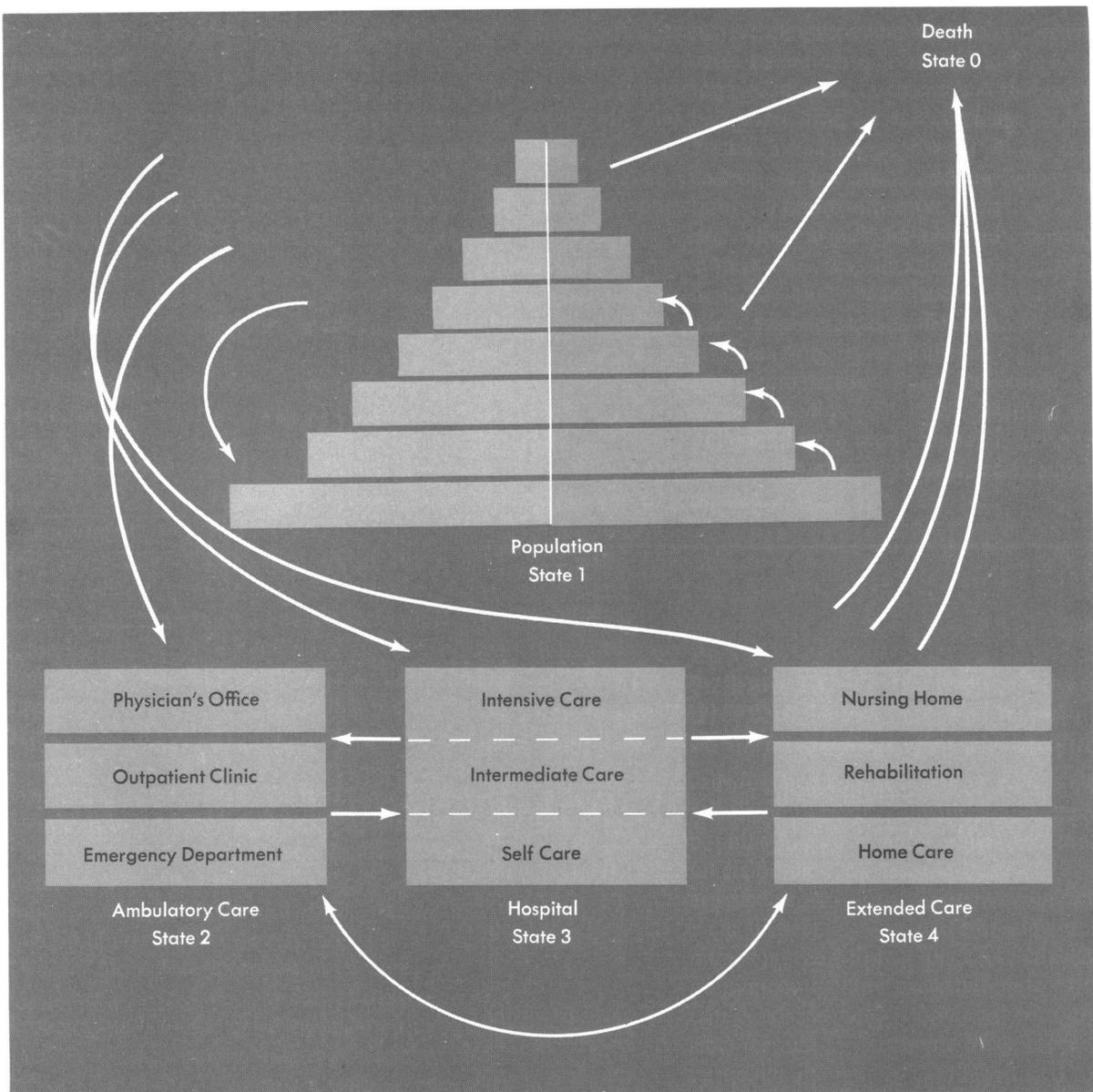
Using Flagle's model, the process of patient assessment can be further divided into seven pro-

cedures, grouped into the same three stages: input, throughput, and output.

STAGE 1 encompasses triage and admission to setting in two procedures:

1. Identification of the total care needs of the patient
2. Identification of the appropriate environment and services, which will maximize the proba-

Figure 1. Model of patient flow into and through health service facilities



SOURCE: Reference 5.

bility of success in satisfying the patient's care needs

STAGE 2, patient care progress in the setting, includes the following procedures:

1. Establishment of goals for individual patients
2. Arrangement for care services, utilizing the most appropriate available resources

3. Identification of changes in patient status that need special attention

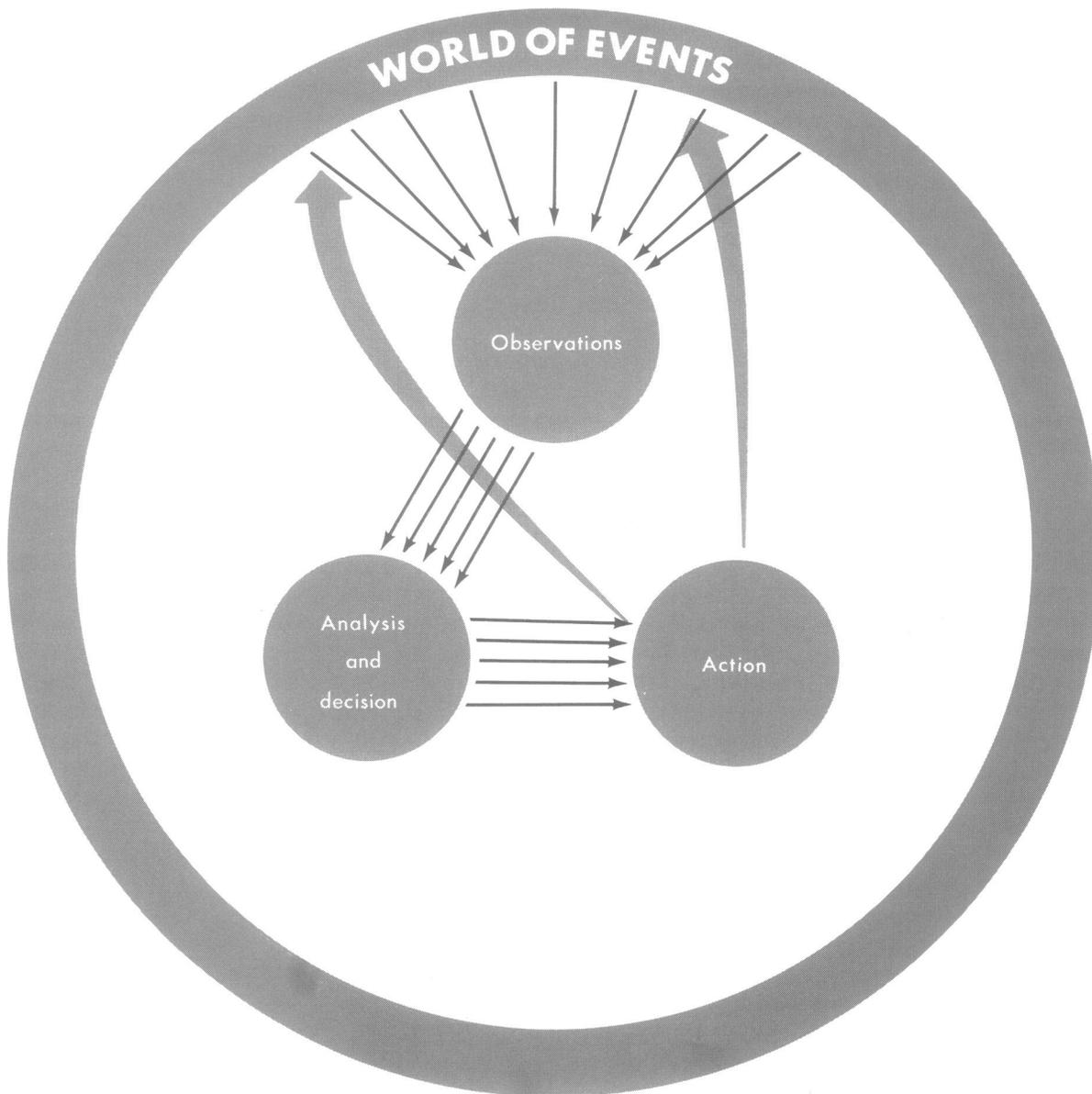
4. Continuing appraisal of patient's progress in relation to the original treatment goals, with revision of care plans as indicated

STAGE 3 includes triage and discharge from a setting or transfer from one setting to another and

consists of one procedure: On review and reappraisal, arrangement for discharge from active care or transfer to a different setting, or both.

Patient assessment may take place during any or all of these seven procedures, as a result of which a decision is made concerning the placement or care

Figure 2. Cybernetic model of judgment



SOURCE: C. D. Flagle, Public Health Service meeting, Arlington, Va., August 1967.

plan of the patient. In addition, patient assessment permits classification of the patient into a specified statistical group for certain epidemiologic or other purposes.

The primary focus of current studies in patient assessment is directed to the how and the who. It has become common to refer to the desirability of placing the right patient in the right place at the right time at the right cost. The how of decision making and by whom must be geared to serving this desideratum, but the available output from studies, past and present, forms an extremely fragmentary structure. We shall present certain of these studies subsequently as a framework for discussion and to indicate areas of possible investigation.

In addition to his ecological model concerned with patient flow, Flagle also presented at a 1967 Public Health Service meeting a model of patient assessment dealing with the decision-making process. This model describes a cybernetic system, implied to have purposeful, self-adaptive, goal-seeking characteristics. In this model (fig. 2) observations are made of the world of events, which lead to analysis and decision which, in turn, lead to action that modifies the world of events.

Citing Abercrombie's psychological study, "The Anatomy of Judgment" (6), Flagle indicates how judgments of the world of events by each discipline would differ. ("Judgment" includes both processes, the observations and the analysis and decision, shown in figure 2.) In receiving information from a given "stimulus pattern," one selects from the total amount of information available and from one's own store of information. The infor-

mation that a person gets from a specified part of the outer world, therefore, depends on the context, or total situation, and on past experience. With appropriate training, the validity of judgments of the world of events may be improved through reorganization of one's store of experience.

This learning process occurred, for example, in the development by Burack and Densen of the "Interdisciplinary Classification for the Chronically Ill," a study of patients in three settings (home for the aged blind, home care program, and nursing home) involving the judgments of three disciplines: physician, nurse, and social worker. (The study was made for the Medical and Health Research Association of New York City, Inc.) With the principal investigator (the physician) establishing the standard, his project staff learned to agree more closely with him than did the regular staff in the three study settings. This fact was attributed to the longer experience the project staff had in classifying patients in all three settings and the continued orientation and instruction that came about through staff conferences and working sessions.

A noteworthy factor in the design of this study was the concurrent collection of data and its analysis by an interdisciplinary group. Reasons for differences in observations between personnel could be elucidated; sharpened definitions of terms and more meaningful subsequent observations resulted. The results indicated that improvement in data may be obtained with planning and concerted effort to reduce differences in perception and understanding among professional disciplines and to achieve uniform semantic interpretations.

Additional characteristics of this study are discussed in the section on "Examples of Studies."

Again following Flagle's suggestions, it is pertinent to review the recommended procedure for determining criteria for patient assessment in an earlier study of progressive patient care, which can serve as a baseline for consideration of procedures in the currently explored, extended, and complex situation (7):

The patient evaluation team should agree on those patient conditions, or combination of conditions, which will constitute the criteria for admission to, or discharge from, a patient care unit. The team should regard each patient condition as a factor to be considered in determining the most appropriate care unit to assign a patient. . . .

Three weights may be used in classifying patients: compelling indicator, moderate indicator, and contraindicator. One of these three weights should be assigned to each patient condition and level of intensity. The team should ask the question: Is the intensity of the condition a compelling, moderate, or contraindicator for assignment to the intensive care, intermediate care, or self-care unit? When the entire list of patient conditions is thus weighted, it is then possible to establish rules for the admission to, and discharge from, a specific unit.

The following criteria are suggested as a basis for determining patient assignment:

One compelling indicator for intensive care is sufficient reason for assignment to the intensive care unit.

Four or more moderate indicators for intensive care constitute sufficient reason for assignment to that unit.

If there is no justification for assignment to intensive care, and in the presence of a contraindicator for self-care, the patient is automatically assigned to intermediate care.

In the absence of moderate indicators for either intensive or intermediate care, and in the absence of a contraindicator for self-care, assignment is to self-care.

The preceding quotation from a progressive patient-care study

in a short-stay hospital has been cited in detail as an example of an effective aid in the decision-making process. A schema was developed with specified variables and with criteria expressed in quantitative units. But the subject of patient assessment, as applied to all care settings, requires a more generalized presentation. In this broader framework, one cannot readily set up a simple dichotomy of decisive and modifying indicators, or specify rules in which the addition of certain numbers of modifying factors would have a weight equivalent to a decisive factor. The weights of modifying factors may vary widely according to various interrelationships and mixes of factors. Also, quantitative measures have not been established for all variables.

Application of "Set" Theory

In light of the diversity of approaches cited and the difficulty of defining variables, generalized concepts and terminology are proposed. Certain terms used in economic planning, like "feasible," "efficient," and "optimal," are applicable in patient assessment. In the field of feasible decisions that might be made in the placement of patients, some decisions will be efficient and some will not. Of the efficient decisions, one may be optimal.

The optimal decision is defined as one that takes into account all pertinent factors in the condition of the patient, all pertinent factors in his environment, both household and community, and the available supply of community health resources; and in the making of this decision, all pertinent methodology of relevant professional disciplines are brought into play. The optimal decision should be distinguished

from the best possible decision for the patient's medical outcome if there are no barriers, such as cost and availability, to effecting that outcome.

Certain considerations have led to the distinction between medical decisions and optimal decisions. A physician may, on the basis of his examination of a patient, determine that placement in a certain setting would be ideal for the patient; that is, his decision is selected from the field of feasible decisions. But another professional, say a social worker or a public health nurse, may collect information indicating the existence of some barrier in the community to placement of the patient in the stated setting. The addition of this new information to that obtained by the physician has the effect of reducing the field of feasible decisions and excluding the physician's decision. Continuing this process, the addition of all pertinent information with utilization of all pertinent disciplinary know-how could then reduce the field of alternative decisions to an optimal decision.

This example illustrates the application of "set" theory to this problem. The mathematical concept set, defined simply as a collection of objects or elements (8, 9), is useful for handling such generalities in a logical manner. Two general types of sets are defined: (a) sets of events such as physical factors, social factors, and so on; and (b) sets of professional know-how embodied in certain disciplines (medicine, social work, and others).

A decision set is defined as the set of pertinent elements formed from the intersection of a pertinent events set with a pertinent discipline set. In the decision-

making process, when selecting one alternative from among many feasible decisions, an increase in the number of discipline and events sets forming the intersection could lead to a reduction in the set of alternative decisions. The purpose of collecting data on patients may then be indicated—to increase the necessary data concerning events, utilizing appropriate disciplinary know-how, so as to reduce the set of feasible decisions to the set of efficient decisions, or, hopefully, to the optimal decision.

The effect of additional information or disciplinary know-how, or both, on the number of possible alternatives is shown in figure 3. The first diagram shows the intersection of the physician discipline set with the physical events set. The subset represented by the cross-hatched intersection includes decisions resulting from observations and analysis and decision of a physician looking only at physical events. The second diagram shows the addition of the social worker discipline set and the economic events set to the previous diagram. This addition of know-how and data has the effect of eliminating some possible decisions, illustrated by the diminished area of the intersection (doubly cross-hatched) of two disciplinary sets with two events sets.

The following example illustrates the use of set terminology. If the world of events for a patient were to include cost-effectiveness considerations, but the disciplinary judgments were only to take into account all pertinent considerations in the physical, social, and psychological events sets, the intersection of the disciplinary judgments with these three events sets could produce a

set of feasible decisions. If the economics events set, including the elements of cost-effectiveness, were intersected with the previously formed intersection, then the decision set formed from the resulting intersection could include only efficient decisions, or even better, only the optimal decision.

Examples of Studies

Having looked at the theoretical model of patient assessment, we turn now to further details of Public Health Service-supported studies directed toward practical applications. With the intention of applying patient assessment to long term care institutions, the San Mateo County (Calif.) Department of Public Health and Welfare attempted to profile patients with the acronym RAPIDS. This profile included the following six measures, which were assumed to cover all the relevant characteristics of long term care:

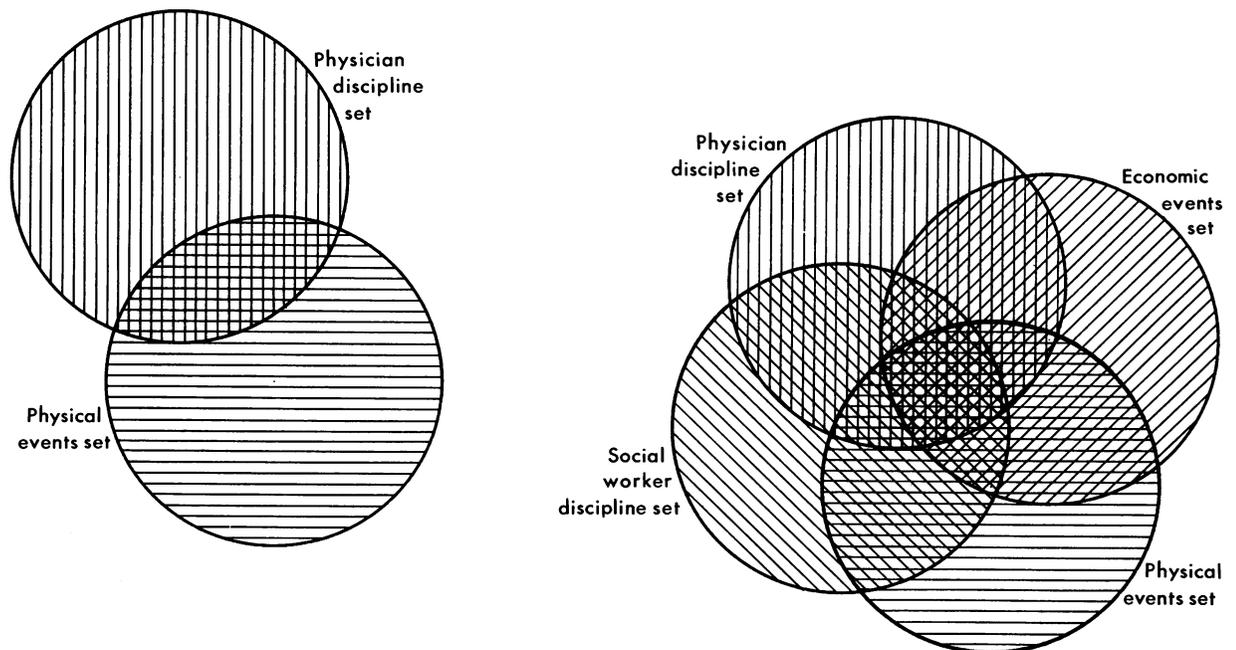
- R**estorative procedures
- A**ctivities of daily living
- P**roblem behavior
- I**llness
- D**ependency, general
- S**ocial service

Each of these measures was scored on a 5-point scale, with each score based on the answers to a series of questions. Initially, development was confined to the use of form E, "Actual Effort Expended," in which the amount and nature of care given was measured. But recognition that spelling out the care given to a patient was not enough and that specific attention should be given to unmet needs of patients led to the development of form N, "Needs of the Patient." In addition to investigating the reliability or consistency of scores obtained by several independent observers, study was directed toward two uses of this profile: (a) to make a decision whether the patient was in the right setting and (b) in utilization review. It is note-

worthy that an attempt to use this classification procedure in the placement of patients in Baltimore City Hospitals was not successful.

The study of Baltimore City Hospitals, mentioned before, was started in 1963 with the aid of a project grant from the Public Health Service's Community Health Services and Facilities (a) to establish a realistic goal for the treatment and rehabilitation of each patient, (b) to make a realistic prognosis as to the most appropriate type of ultimate placement for each patient, and (c) to mobilize the hospital resources in the most efficient and effective manner possible for the interim treatment. The program was oriented along the practical lines of developing and utilizing a system of patient assessment to assure that all patient needs would be met and community resources utilized as effectively and efficiently as possible. Subsequent study was to include investigation

Figure 3. Intersections of sets



of the decision process itself and identification of the indicators in the model which must be measured.

Although organizational factors prevented completion of the study, one early negative finding was that the patient profile as displayed by the RAPIDS scheme did little to indicate what

decisions were needed for care of the types of patients confronting the staff of this municipal hospital. The spectrum of needs was much broader than that of the institutional population for which the RAPIDS system had been used in San Mateo County.

Improvement in the measurement operation by professional

observers in development of the "Interdisciplinary Classification for the Chronically Ill" by Densen and Burack in New York has been discussed in the section on "Theoretical Considerations." In the course of careful measurements, with review of the implications of such measurements, a manual of instruction was compiled with

Proposed Items for Inclusion in Standard Patient Assessment

I. Identifying data

1. Name
2. Address including phone
3. Person to notify in emergency
4. Source of referral
5. Physician responsible
6. Year of birth
7. Sex
8. Race
9. Ethnic group
10. Religion
11. Education
12. Marital status
13. Significant employment history
14. Amount and source of income
15. Sources of payment
16. Type of dwelling
17. Household composition
18. Significant relatives outside household.

II. Medical data

1. Present illness
 - a. Diagnosis
 - b. Course
 - c. Prognosis
 - d. Present status
 - e. All prescribed medications
 - f. Appliances
2. Other diagnoses
3. Goals and overall prognosis
4. Impairments (all systems)

III. Physical function

1. Personal care
 - a. Present performance
 - b. Present ability to perform
 - c. Potential ability to perform
2. Ability to move about
 - a. Present performance
 - b. Present ability to perform
 - c. Potential ability to perform

3. Other essential ADL (as applicable)

- a. Present performance
- b. Present ability to perform
- c. Potential ability to perform

IV. Personal adjustment

1. Mental functioning (ability to understand care needs and participate in planning and decision making)
2. Behavior patterns
3. Impact of illness (attitudes, behavior, feelings, goals)
4. Adjustment to illness (attitudes, behavior, feelings, goals)
5. Social adjustment (interpersonal relationships)
 - a. Patient—family members
 - b. Patient—household (most important person)
 - c. Patient—others (significant persons)

V. Family adjustment

1. Impact of patient's illness on family
2. Adjustment to patient's illness
3. Characteristics of family members (interpersonal relationships)
4. Characteristics of caretaker
5. Goals of family
 - a. For patient
 - b. For family situation

VI. Physical environment

1. Present housing and living arrangements
2. Possible modifications, if indicated

VII. Services from community agencies

1. Services currently received by patient and/or family
2. Significant services previously received by patient and/or family

specified procedures for obtaining information in both community and institutional settings. Four categories were used: medical classification, functional level of performance, projected functional goals, and therapeutic category, with the first three scored on 4-point scales. Five potential services (medical care, nursing care, and psychiatric, rehabilitative, and social casework or social group work, or both) were recorded in the therapeutic category, with each indicated on a 2-point scale.

In charting out new territory for measurement, the area of projected functional goals has been a more difficult one in which to secure common agreement. This classification was originally conceived and used as a tool for patient management within the home for the aged blind, and was then tested for broader use in other settings. Further development and testing is required to achieve its potential uses in the several aspects of patient assessment—epidemiologic investigation, program evaluation, and future planning of health resources.

A study of the process for patient placement was conducted, as stated, in the emergency room of St. Luke's Hospital Center, New York City. The necessity for making speedy decisions has been a governing factor in the amount of information that may be collected and the professional persons seeing the patient. Generally, the patient was seen by either a public health nurse or a social worker, and procedures for operating under these conditions were established.

As mentioned previously, patient assessment as an aid in community planning of health facilities was studied and developed

in Syracuse in the two-phase survey of the Community Health Information and Planning Service (4). After finding that an appreciable percentage of the patients in short-stay hospitals should have been discharged to some other setting for care, patient assessment procedures in long term institutions, in the second phase, were broadened from assessment by physicians only to assessment by teams of physicians, social workers, and public health nurses. In addition, the decision-making activity of these teams was observed by sociologists with a view to increasing our insight into the dynamics of this process. Results of procedural research in phase 2 were applied in a subsequent survey in neighboring Cayuga County.

Future Research Needs

Participants in the studies discussed here met in several workshops, sponsored by the Public Health Service, to establish a mutually acceptable framework of guidelines and to discover and then explore an essential commonality of approach to assessment of the patient and decision making concerning his placement. A tentative list (page 930) of data concerning the patient was compiled with sufficient detail to serve the several possible purposes of patient assessment.

As discussions continued, diverse paths were proposed for further development and improvement of this tool for patient assessment. These include elimination of nongermane items and refinement of the list to include the essential variables to be used in different settings. In addition, the adoption of scales for selected variables, where indicated, is an object for future development. Collaborative studies, led

by Dr. Paul Densen, director, Harvard University Center for Community Health and Medical Care, are underway to improve the classification methods so as to specify objective criteria in the use of indicators.

Since each assessment procedure develops out of its milieu, the task of systematization of procedures will not be easy. The resolution of difficulties, however, must go forward in concert with the general effort to overcome problems in the health care field. Efforts have been initiated by Arthur Waldman, executive vice president of the Philadelphia Geriatric Center, for the exchange of patient assessment information between countries through the International Association of Gerontological Member Societies. Future research therefore must be directed toward further specification of the elements necessary for decision making.

For each of the seven procedures in the process of patient assessment during input, throughput, and output, indicators for decision must satisfy the criteria of validity, reliability, and relevance. Further research is also needed to clarify prognostic concepts including medical data, functional performance, and projected goals, so that decision making can be consistent with the needs of the patient. A manual of instruction should be developed to enable personnel applying patient assessment to observe, record, and analyze pertinent data and to make efficient and effective decisions.

Personnel carrying out patient assessments obviously will need orientation and training to make effective observations and suitable decisions. Although existing programs have utilized multidisciplinary teams for the sake of

practicality, research should be undertaken to determine whether or not observation, decision, and action can be carried out by one discipline instead of by two or more. For example, in the emergency room study at St. Luke's Hospital Center, it was suggested that the set of disciplinary elements required for decision making in this care setting be included within either the nursing discipline or the social work discipline sets. These areas are being investigated and give promise of leading to an effective tool that will be field tested and adopted in an ongoing program of application.

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Patient assessment, as distinguished from patient care evaluation, is defined as a tool to assist in decision making for patient placement in the care system and for care of the patient. Twelve uses of this tool with respect to the patient, individual resource, community, or research are identified. In an ecological perspective, seven procedures within three stages—input, throughput, output—of the patient assessment process are identified. Mathematical set terminology helps clarify the combination of information for decision making.

Patient assessment identifies patient care needs and ascertains adequacy of available care; it develops a treatment plan and aids in utilization review and evaluation. It facilitates utilization of the individual health resource, aids in program evaluation, assists in identifying restrictive policies and procedures, and provides data for training of

health personnel. Patient assessment facilitates development of an efficient system of community health care, assists in establishing priorities for health planning, and helps to determine needs for new services. Research is advanced through identification of population care needs and in epidemiologic comparisons of groups of patients.

Stage 1 in the patient assessment process encompasses triage and admission to a setting, with procedures for identification of total patient care needs and for identification of appropriate environment and services. Stage 2 includes establishment of individual patient goals, arrangement for services, utilizing appropriate resources, identification of changes in status that need special attention, and continuing appraisal of his progress. Stage 3 involves arrangement for discharge from active care or transfer to a different setting.